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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/737,398	12/16/2003	Young-Doo Kim	51876P442	7625

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BLAKELY SOKOLOFF TAYLOR & ZAFMAN
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

EXAMINER	
TRAN, KHAI	

ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
01/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/737,398	KIM ET AL.	
	Examiner	Art Unit	
	KHAI TRAN	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 18-20* is/are rejected.

7)☒ Claim(s) *12-17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/16/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-11, 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Thielecke et al (U.S. Pat. 7,120,199).

Regarding claim 1, Thielecke discloses an apparatus for adaptively modulating signal in a MIMO system having a layered space-time architecture based detector, the apparatus comprising: a bit and power allocation information calculator for deciding an equivalent channel gain in a reverse order of Vertical-Bell laboratories Space Time (V-BLAST) based on MIMO channel information feedbacked from a receiver and determining the number of bits and transmission power to be transmitted to each transmitting antenna by using the equivalent channel gain (col. 4, lines 38-67, col. 5, lines 38-67); and adaptive modulation mean for modulating signal of each layer with corresponding modulation method based on the determined number of bits, controlling the transmitting power and

transmitting the adaptively modulated signal through each transmitting antenna (col. 6, lines 1-51).

Regarding claim 2, Thielecke discloses wherein the transmitter detecting and modulating signals in a reverse order of a V-BLAST (col. 6, lines 12-40).

Regarding claim 3, Thielecke discloses wherein the receiver transmit identical adaptive modulation information with the modulation method and transmitting power instead of feedbacking the MIMO channel information (col. 1, lines 56-67).

Regarding claim 4, Thielecke discloses wherein the bit and power allocation information calculation mean determines an equivalent channel gain in the reverse order of V-BLAST and calculates the number of bit information and corresponding transmitting power at each layer by using the equivalent channel gain in a greedy algorithm instead of using channel gain (col. 6, lines 41-67).

Regarding claim 5, Thielecke discloses MIMO channel estimation means for estimating MOMO channel from a signal received through each receiving antenna (col. 9,.lines 25-33); a bit and power allocation information calculator for determining an equivalent channel gain in reverse order of Vertical-Bell laboratories Space Time (V-BLAST) based on MIMO channel information from the MIMO channel estimation means and determining the number of bits to be transmitted from each transmitting antenna by using the equivalent channel gain (col. 5, lines 38-67); and adaptive demodulation means for demodulating signal

of each layer with corresponding modulation method based on the determined number of bits and the MIMO channel information (col. 6, lines 1-51).

Claims 6-7 are similar to claims 1, 5. Therefore, claims 6-7 are rejected under a similar rationale.

Regarding claim 8, Thielecke discloses wherein the apparatus has (the number of subcarriers) x (the number of transmission antennas) of equivalent channel gains and determines the number of bits and transmitting power to be transmitted through each transmission antennas in a MIMO- OFDM system having a layered space-time architecture detector (col. 2, lines 40-50).

Regarding claim 9, Thielecke discloses wherein the apparatus independently detects and demodulates signals per each subcarrier by determining the number of bits and transmitting power to be transmitted through each transmitting antenna per each subcarrier in a MIMO OFDM system having a layered space-time architecture detector (col. 2, line 59 to col. 3, line 11).

Claims 10-11 are similar to claim 1. Therefore, claims 10-11 are rejected under a similar rationale.

Claim 18 is similar to claim 5. Therefore, claim 18 is rejected under a similar rationale.

Claims 19-20 are similar to claims 1 and 5. Therefore, claims 19-20 are rejected under a similar rationale.

Allowable Subject Matter

3. Claims 12-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHAI TRAN whose telephone number is (571) 272-3019. The examiner can normally be reached on 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KHAI TRAN
Primary Examiner
Art Unit 2611

KT
January 14, 2008